# Shuffling

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# Consider this dataset

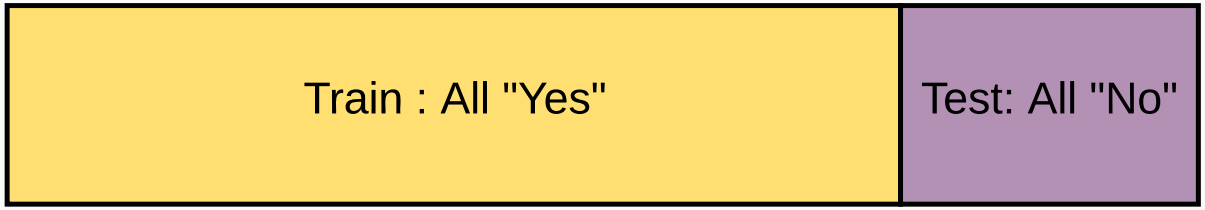
First 80 examples are of class "Yes"

Remaining 20 examples are of class "No".

| **Serial Number** | **...** | **Class** |
|---|---|---|
| 1 | | Yes |
| 2 | | Yes |
| 3 | | Yes |
| . . | | . . |
| 80 | | No |
| 81 | | No |
| . . | | . . |
| 100 | | No |

# Consider this dataset

While using a 80-20 train-test split , we will get the distribution shown below



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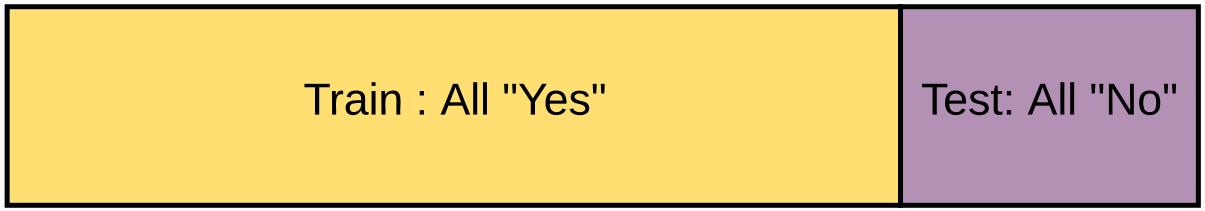


Will we learn anything useful in this scenario?

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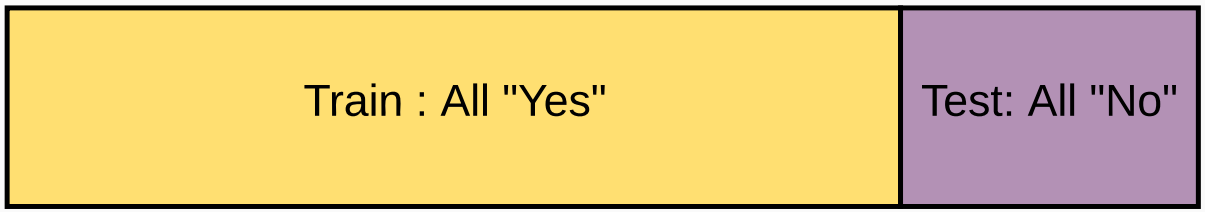


Will we learn anything useful in this scenario? *No* :(

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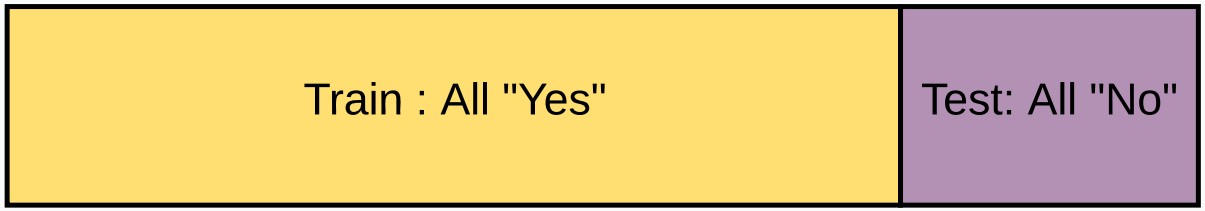


Will we learn anything useful in this scenario? *No* :(

*Solution* : Shuffle before learning

# Why shuffle for SGD?

We can fall into a loop!

SGD on point 1 : $\theta_0 + 0.2, \theta_1 - 0.2$
SGD on point 2 : $\theta_0 - 0.2, \theta_1 + 0.2$

Biased learning as point 2 follows point 1.